

January 8, 2002

COMMISSION VOTING RECORD

DECISION ITEM:      SECY-01-0113

TITLE:                      FATIGUE OF WORKERS AT NUCLEAR POWER  
   PLANTS

The Commission (with Chairman Meserve and Commissioners Dicus and McGaffigan agreeing) approved the subject paper as recorded in the Staff Requirements Memorandum (SRM) of January 8, 2002. Commissioners Diaz and Merrifield disapproved the paper.

This Record contains a summary of voting on this matter together with the individual vote sheets, views and comments of the Commission.

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Annette L. Vietti-Cook  
Secretary of the Commission

Attachments:

1. Voting Summary
2. Commissioner Vote Sheets

cc:      Chairman Meserve  
         Commissioner Dicus  
         Commissioner Diaz  
         Commissioner McGaffigan  
         Commissioner Merrifield  
         OGC  
         EDO  
         PDR

## VOTING SUMMARY - SECY-01-0113

### RECORDED VOTES

	APRVD	DISAPRVD	ABSTAIN	PARTICIP	NOT COMMENTS	DATE
CHRM. MESERVE	X					X 1/02/02
COMR. DICUS	X					X 10/23/01
COMR. DIAZ			X			X 11/15/01
COMR. McGAFFIGAN	X					X 1/02/02
COMR. MERRIFIELD			X			X 10/02/01

### COMMENT RESOLUTION

In their vote sheets, Chairman Meserve and Commissioners Dicus and McGaffigan approved the subject paper. Commissioners Diaz and Merrifield disapproved the paper. Subsequently, the comments of the Commission were incorporated into the guidance to staff as reflected in the SRM issued on January 8, 2002.

## Commissioner Comments on SECY-01-0113

### Chairman Meserve

I concur with the staff's recommendation that the NRC commence a rulemaking to address fatigue of workers at nuclear power plants, subject to the following comments.

As the staff has explained, there is an abundance of studies in both laboratory and diverse work settings that show, as a general matter, that fatigue can result in reduced human performance. It can result in degraded alertness and decision-making and can cause the commission of errors. *Assessment of the NRC's "Policy on Factors Causing Fatigue of Operating Personnel at Nuclear Reactors,"* SECY-01-113, Attachment 1 at 22-23 (Staff Assessment). In light of the critical role of plant staff in ensuring the safe operation of nuclear reactors, there is a legitimate interest in ensuring that fatigue does not impair personnel performance. Indeed, the NRC has long recognized the need for protections from fatigue through the promulgation of a policy statement in 1982,<sup>1</sup> and through the incorporation of that policy into technical specifications at nearly all nuclear reactors.

It is apparent, however, that the existing system is not working effectively. The policy is applied unevenly, deviations reserved for extraordinary circumstances are commonly authorized, and extensive overtime is routine. *Id.* at 16-19. Moreover, the technical specifications do not allow effective regulatory control because the language is largely advisory and is subject to broad interpretation. Although it is true that fatigue-induced errors are not commonly identified, this may simply be the consequence of the fact that event-investigation methodologies are inadequate to address fatigue as a root cause. *Id.* at 23-24. Because the performance of nuclear workers, like all humans, is subject to the adverse effects of fatigue, because the risk significance of fatigue-induced errors can be significant,<sup>2</sup> and because the existing policy is not working effectively, I support the achievement of greater consistency and effectiveness through a rulemaking.

I also concur in the staff's recommendation that the Commission endorse Option 2 of the Rulemaking Plan (Attachment 3), with one important exception. Option 2 is intended to lead to a performance-based approach by establishing thresholds for work-hour controls, while simultaneously allowing flexibility and a focus on safety through a risk-informed deviation process. It would also seek to ensure that fatigue through any cause is addressed through licensee programs. Although I endorse these general aspects of Option 2, I am not prepared at this time to conclude that the current policy limits on working hours are inappropriate. Instead, I believe that this issue should be fully explored in the rulemaking process. The practices of other industries and other countries should appropriately provide a backdrop for the NRC's consideration of this issue, but the NRC policy should be established with a full appreciation and understanding of the unique circumstances and practices of the nuclear industry. Staff should seek to develop the rule in an open, consultative process with stakeholders.

The staff has concluded that the proposed rulemaking will require a backfit analysis

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<sup>1</sup> NRC, "Policy of Factors Causing Fatigue of Operating Personnel at Nuclear Reactors," 47 Fed. Reg. 7352 (1982)

<sup>2</sup> *Id.* at 25-27

under 10 C.F.R. § 50.109(a)(4). I concur with the conclusion of Commissioners Dicus and Merrifield that staff should address backfit issues before expending significant resources on the rulemaking.

#### Commissioner Dicus

Several of our stake holders raised important questions pertaining to the safety at our nuclear plants with respect to fatigue of workers. The staff has performed an investigation, and proposed a solution that seeks to address concerns raised by several stake holders. I commend the staff for their effort and approve staff's proposal. I approve the staff's request after considering all of the following:

1. I agree that staff identified a weakness in the regulatory framework in that we have a policy which is inconsistently interpreted, or misinterpreted by the licensees.
2. I agree that using actual operating experience, staff demonstrated that the inconsistent interpretation or misinterpretation of policy has lead to an unacceptable number of exemptions from policy.
3. I agree that staff demonstrated that excessive fatigue leads to poor performance and increase the potential for human errors. I emphasized the word "potential" here because, staff has not identified any risk-significant events or performance trends attributable to fatigue.
4. Given agreement of high-level objectives among all stakeholders, It behooves us to be pro-active rather reactive in this area.

I am encouraged to note the significant overlap of high-level objectives among stake holders and the staff on this issue. We should build upon the shared objectives to address the few areas of differences in opinions and objectives. To that extent, I make the following comments:

1. The staff must give serious consideration to the need for management flexibility to deal with unforeseen and emergent work at their plants, while they proceed with the rulemaking.
2. The staff must address the issue of backfit, before expending significant resources on this rulemaking effort. In Commissioner Merrifield's comments on this issue, he expressed his concern on whether the recommended regulatory changes would result in a substantial increase in the protection of public health and safety, and whether the costs of the proposed rule would be justified. I concur with Commissioner Merrifield and direct the staff to address the issue of backfit before expending significant resources on the rulemaking.

#### Commissioner Diaz

I commend the staff for the excellent work done in assessing the worker fatigue issue and preparing a clear, well written paper on the subject. However, for the reasons stated below, I disapprove proceeding with a rulemaking.

Commissioners Dicus and Merrifield make excellent points regarding backfit analysis as it is not clear that this analysis would support option 2 as proposed by the staff. The staff found that few events at nuclear power plants had been attributed to fatigue, and in all instances, automated safety systems or other barriers were available to prevent events that may have had safety consequences. Based primarily on the fact that there was no significant information indicating that worker fatigue was a contributor to safety significant events that posed a danger to public health and safety, I am opposed to rulemaking at this time.

It is clear that the NRC's guidelines should be updated with stakeholder input and the guidelines should be clearly communicated with licensees. The staff found that the frequency of licensee deviations from the guidelines does not appear to be consistent with either the existing guidelines or the general objective of the policy. It appears that relatively few licensees account for a large number of the deviations from the NRC guidelines. Moreover, for safety significant failures, including those attributed to deficiencies in licensees' programs to control fatigue of workers, the reactor oversight process provides mechanisms for taking action.

The staff's stated objective is to achieve a uniform level of assurance across the U.S. commercial nuclear power industry that personnel, whose duties may affect nuclear power plant operational safety, are not in a fatigued condition that could significantly reduce their alertness or decisionmaking ability. I believe that these objectives can be met without rulemaking.

#### Commissioner McGaffigan

I join my fellow Commissioners in praising the quality of SECY-01-0113 and its attachments. I join Commissioner Dicus in approving the staff's recommendations, namely to grant, in part, PRM-26-2 by undertaking rulemaking to address fatigue of workers at nuclear power plants and to develop the proposed rule using Option 2 of the rulemaking plan.

I believe that the staff has made a compelling case that the current policy on worker fatigue, based on the Commission's 1982 policy statement, is ineffective. I am uncomfortable with the data presented in Attachment 1 about current overtime practices at many nuclear power plants. These practices are clearly inconsistent with the intent of the 1982 policy statement. I am uncomfortable with the fact that NRC's 1982 working hour guidelines were collectively the least restrictive of those studied by the staff in other regulated industries in this country and in commercial nuclear power plants abroad. The staff cites numerous research reports which question many of the 1982 guidelines (working 16 hours straight, a minimum 8 hour break, working 72 hours in a week, etc.).

The staff's objective in the proposed rulemaking is to achieve a uniform level of assurance across the U.S. commercial nuclear power industry that personnel whose duties may affect nuclear power plant operational safety are not in a fatigued condition that could significantly reduce their alertness or decision making ability. I do not believe that this objective can be achieved by just updating NRC's guidelines without rulemaking. An updated policy statement would likely prove no more effective than the existing guidelines, unless it was accompanied by industry-wide revision of plant technical specifications by license amendment, an unlikely event in light of industry opposition. For example, the Commission clarified in 1983 that key maintenance personnel were meant to be included in the working hour limits. Yet at several plants no maintenance or engineering personnel have ever been covered.

Commissioners Merrifield and Diaz raise concerns about whether an option 2 rulemaking could pass a backfit rule test. I believe that it can, and I agree with Commissioner Dicus that the issue should be addressed early in the rulemaking effort.

One final issue which I would like to raise is whether security force personnel should be included among those covered by the Option 2 rulemaking. They were not covered by the 1982 policy statement. The effect of fatigue on the security force is not something that can be modeled in a probabilistic risk analysis. Yet, if security force fatigue resulted in an ineffective response to an actual terrorist attempt at radiological sabotage, the consequences would be just as severe as if caused by an operator's fatigue in dealing with a reactor event. Since this has not been considered in the staff's effort thus far, I am reluctant to delay the rulemaking to allow the staff to explore this matter in detail. But it may be appropriate to seek stakeholder comment on whether security force personnel should be included in the proposed rule's coverage and amend the final rule as appropriate in light of the comments.

#### Commissioner Merrifield

I appreciate the staff's considerable efforts associated with SECY-01-0113. This paper is well-written and the principal findings from the staff's policy assessment are clearly presented. I fully support the staff's position that the NRC must improve its regulatory effectiveness in this important area. However, I am not prepared to support the staff's recommendations at this time. Specifically, I do not approve the staff's plan to grant, in part, PRM-26-2 by undertaking rulemaking to address fatigue of workers at nuclear power plants. I also do not approve the development of a rule using Option 2 of the rulemaking plan.

My primary concern is that the Commission is being asked to choose from four rulemaking options and two alternatives to rulemaking without having the benefit of stakeholder views on these options. Absent these views and a better understanding of the effects each of these options would have on plant operations and safety, I do not believe I am able to make a fully-informed decision. One could argue that the merits of the option approved by the Commission would be more fully vetted during the rulemaking process. I do not disagree. Nonetheless, I am concerned that the Commission is being asked to disapprove the remaining options, essentially close the door on them, without fully understanding their merits, how stakeholders view them, or how they would effect plant operations and personnel. I simply do not believe it would be prudent for the Commission to approve any option before we have a better understanding of stakeholder and licensee views on all of the options presented.

Another concern I have centers around the issue of backfit. The rulemaking plan reflects that the staff will prepare a backfit analysis as part of the rulemaking process to determine whether the recommended regulatory changes would result in a substantial increase in the protection of public health and safety, and whether the costs of the proposed rule would be justified. Based on the information provided in SECY-01-0113, it is not clear to me that the outcome of this backfit analysis would support rulemaking pursuant to Option 2. This only reinforces my belief that before we close the door on any options, and before we dedicate significant resources and staff effort to a rulemaking that may ultimately not satisfy the backfit test, it would be prudent for the staff to actively engage our licensees and interested stakeholders on how best to address this important matter.

To solicit stakeholder views, the staff should proceed with the workshops that are described in

the paper and should consider publishing an advance notice of proposed rulemaking. The staff should solicit stakeholder views on the options presented in SECY-01-0113 and remain open to options that were not presented. Upon completion of these efforts, the staff should provide the Commission with an updated options paper that captures insights gained from stakeholders, including any additional reasonable options identified by stakeholders. Given the importance of this issue, I strongly encourage our licensees and interested stakeholders to actively, constructively, and responsibly participate in these efforts so that the most effective and efficient regulatory outcome can be achieved. I would consider a failure to do so a missed opportunity.

Finally, I encourage the staff to continue to monitor and keep the Commission informed of the other worker fatigue initiatives underway within the Federal Government, particularly those being conducted by the Federal Aviation Administration.